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EVALUATION OF THE SOUTHERN PINE BEETLE INFESTATIONS ON THE GEORGE WASHINGTON AND JEFFERSON NATIONAL FORESTS, VIRGINIA

By

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INTRODUCTION

Aerial sketchmap and ground surveys were conducted on the ranger districts with ongoing southern pine beetle control projects in September 1976. The survey covered a total of 666,804 acres and included the Pedlar District (275,932 acres) on the George Washington National Forest and the Glenwood (171,081 acres) and the New Castle (219,791 acres) Districts on the Jefferson National Forest. The Forest Insect and Disease Management Group conducted the surveys to determine the status and trend of southern pine beetle populations in these areas.

The southern pine beetle infestations in Virginia are part of a southwide outbreak involving 13 states. Infestations were first detected on these Districts in 1973.

METHODS

Fifty percent aerial sketchmap surveys[1/] were conducted on each of the Districts. A portion of the spots detected during the aerial survey phase of the evaluation were examined on the ground to confirm the cause of mortality and determine the level of activity in the infested areas.

1/ Detection of Forest Pests in the Southeast. 1970. U.S.D.A., USFS SA, S&PF, Div. of FPM, Pub. S&PF-7, Atlanta, GA. 51pp.

TECHNICAL INFORMATION

Insect - Southern pine beetle, Dendroctonus frontalis Zimm.

Hosts - Southern pine beetle is a native forest pest that will attack all species of southern yellow pine and occasionally other conifers as well. Susceptible southern yellow pines include Virginia (Pinus virginiana Mill.), shortleaf (P. echinata Mill.), and pitch (P. rigida Mill.).

Type of Damage - Death of the tree is the result of mining in the cambium by the southern pine beetle as it constructs egg galleries. The beetle also introduces blue stain fungi, Ceratocystis spp., which slow down or block conduction of water in the stem. The size of an infestation may range from a single tree to several thousand trees.

Life Cycle of the Beetle - Southern pine beetles attack in pairs and construct a winding gallery in the cambium. Eggs are deposited in niches along the sides of the galleries. The eggs hatch into whitish grubs that further mine the cambium and then construct cells in the bark where they pupate and change into adults. The new adults then mine through the bark to emerge. The complete life cycle takes about a month during the summer, and as many as four or five generations may be produced annually in the area.

RESULTS AND DISCUSSION

George Washington National Forest

Pedlar District - Southern pine beetle activity has continued to increase on the District. The average spot size has decreased from 140 to 113 trees. However, the number of spots per M acres host type has increased from 6.7 spots to 13 spots. There are an estimated 317 spots on Forest Service lands and 907 infested trees per M acres of host type.

A summary of the aerial survey data is listed below:

SPOT SIZE

2-5	6-20	21-50	50-100	100+	Total
Spots:Trees	Spots:Trees	Spots:Trees	Spots:Trees	Spots:Trees	Spots:Trees
94:268	118:1377	46:1671	18:1537	40:31076	317:35929

The aerial and ground check data is summarized in Table 1.

Although spots were scattered throughout the District, most activity was located west of the Blue Ridge Mountains. Heaviest areas of infestation occurred north of the town of Buena Vista and on the northern end of the Big Levels Game Refuge (Figure 1). Most spots occur in areas inaccessable to salvage or chemical treatment operations. In many instances the timber is often small and not of merchantable quality and size. In addition, there is no market for pine timber. The only mill in the area uses 27% pine in its processing. Consequently, the District is unable to sell many of the spots as salvage.

Seventy percent of the spots checked on the ground were actively infested with southern pine beetle.

Jefferson National Forest

Glenwood District - Southern pine beetle activity has decreased considerably since the last evaluation in 1975. Spots were relatively small, ranging in size from 1 to 25 trees, with an average spot size of less than 8 trees. Last year at this time spot size ranged from 1 to 500 trees with an average spot size of 89 trees. Figure 2 shows the areas where most spots occurred. Of the spots that were ground checked, none were found to be actively infested with southern pine beetle.

New Castle District - Southern pine beetle activity has continued to decrease on the District. Occasional small scattered spots of 1 to 4 trees were detected. One spot with an estimated 30 red topped and fading trees was located. Ground check examination revealed that it was actively infested with southern pine beetle.

RECOMMENDATIONS

Activity on the New Castle and Glenwood Ranger Districts on the Jefferson National Forest is low. It is recommended that southern pine beetle control projects be discontinued on these Districts.

Southern pine beetle populations have continued to increase on the Pedlar Ranger District of the George Washington National Forest. However, as given in reasons stated in the Discussion Section, the District is unable to salvage or chemically treat southern pine beetle infested timber at a level that would effect some control on southern pine beetle. Therefore, since there are no control means available under current conditions that would result in a favorable benefit/cost it is recommended that the southern pine beetle project be terminated on this District.

REFERENCES

Barry, P. J. and R. F. Bassett. 1975. Evaluation of southern pine beetle infestations on the Pedlar Ranger District, George Washington National Forest, Virginia. U.S.D.A., Forest Service, SA, S&PF, Forest Insect and Disease Management Group, Report No. 76-1-11.

Ragenovich, I. R. 1976. Evaluation of the southern pine beetle infestations on the George Washington and Jefferson National Forests, Virginia. U.S.D.A., Forest Service, SA, S&PF, Forest Insect and Disease Management Group. Report No. 76-1-20.

Thompson, J. H. and R. F. Bassett. 1975. Evaluation of southern pine beetle infestations on the Glenwood Ranger District, Jefferson National Forest, Virginia. U.S.D.A, Forest Service, SA, S&PF, Forest Insect and Disease Management Group. Report No. 76-1-10.

Table 1: Summary of Aerial and Ground Check Data for the Pedlar Ranger District, George Washington National Forest, 1976.

	Ownership Unit
	Pedlar Ranger District
1. Results compiled from data collected during the aerial phase of the evaluation:	
Survey type	Sketchmap
Date of aerial survey	9/8/76
Percent survey	50%
Total acreage surveyed	275,932
Total acreage of Forest Service land	141,351
Susceptible host type acreage of Forest Service land	23,760
Total number of spots within the survey boundary	320
Total number of spots on Forest Service lands	317
Spots per M acre of host type Forest Service lands	13
Average spot size (trees) Forest Service lands	113
Range of spot sizes (trees) Forest Service lands	1-2,000
Reds and faders/M acres host type on Forest Service lands	1,512
2. Results compiled from data collected during the ground and aerial phases of the evaluation:	
Date of ground phase	9-14-76
Infested trees per M acre of host type Forest Service lands	907
Total number of infested trees on Forest Service lands	21,557
Total volume of infested trees on Forest Service lands	1,466 MBF
Total number of affected trees on Forest Service lands	59,655
Total volume of affected trees on Forest Service lands	3,699 MBF
Ratio of green infested to total red and fading trees	1:4

Volume - BF - based on Scribner decimal C log rule. Cords converted to bd. ft. based on 500 bd. ft. per cord.

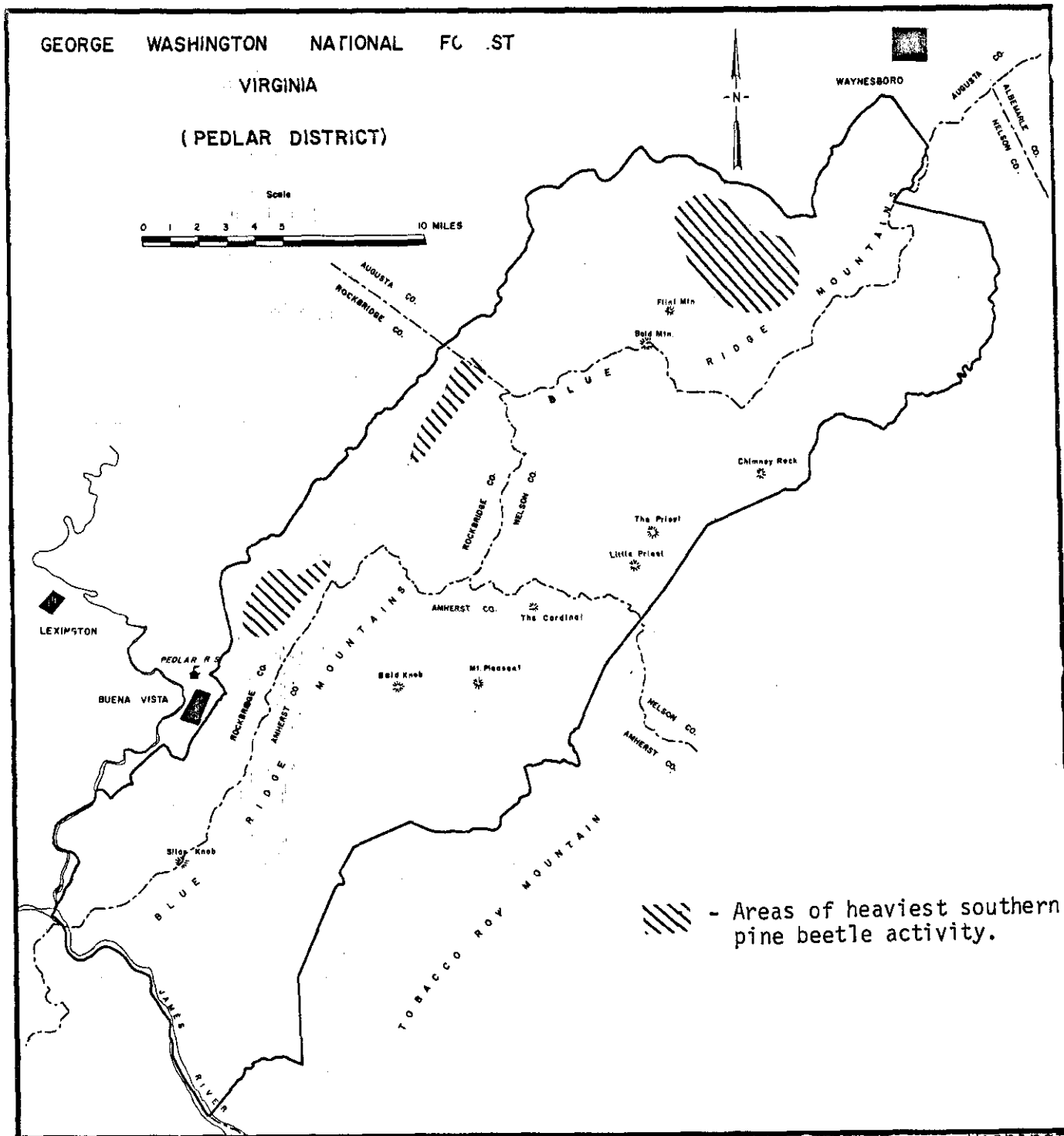

Figure 1: Map showing areas of heaviest southern pine beetle infestation on the Pedlar RD, George Washington NF, VA, 1976.

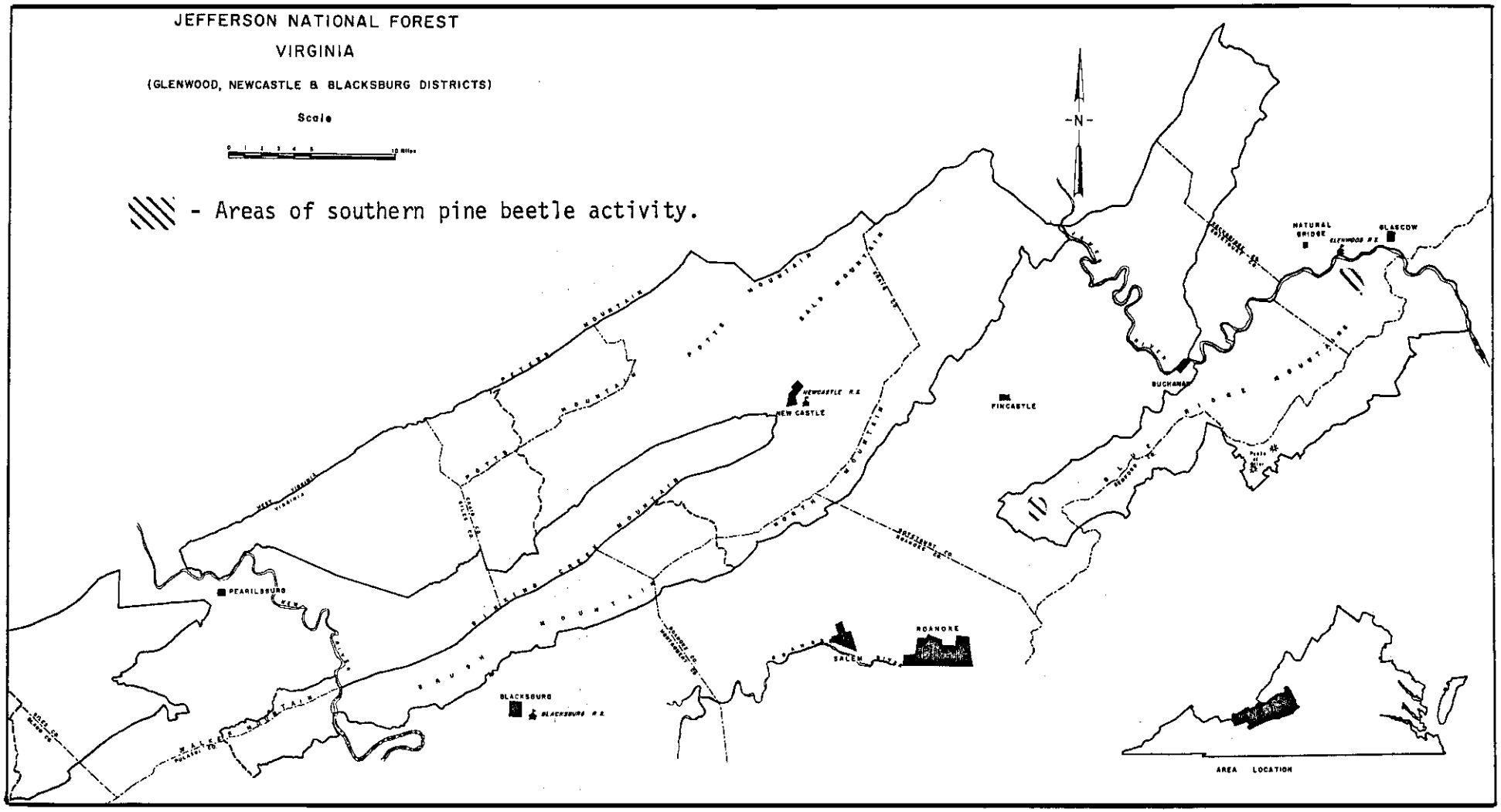

Figure 2: Map showing New Castle and Glenwood Ranger Districts, Jefferson National Forest, Virginia, 1976.